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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,804	11/13/2001	Hitoshi Tsuboi	1272.C0488	6112

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/986,804		TSUBOI ET AL.	
	Examiner		Art Unit	
	LAM S. NGUYEN		2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-15,17-29,31-39,42 and 44-52 is/are pending in the application.
 4a) Of the above claim(s) 15,17-28,42 and 44-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-14,29,31-34 and 36-39 is/are rejected.
- 7) ☒ Claim(s) 7 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Suemune (US 5942043).

Suemune discloses an ink jet printing apparatus capable of performing a preliminary ejecting operation that does not contribute to printing (*column 1, lines 15-18: The cleaning operation includes an ejection operation*), said apparatus comprising:

a print head having an ejecting portion (*column 1, lines 17-21: The ink is ejected through the nozzles for the ejection operation*),

wherein an amount of ink ejected through said ejecting portion varies depending on the amount of time during which printing is not executed (*FIG. 6, step S5A and column 4, lines 41-44: The output of timer 12 is checked to determine an elapsed time from when the recording apparatus is turned off last time*), and wherein an ejection is performed through said ejecting portion only one or two times, selectively, in one preliminary ejecting operation (*FIG. 5: The number of times of ejection is performed in each level of the cleaning operations 3-8 is only 1 or 2*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-6, 8, 10-11, 13-14, 29, 31-34, 36, 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund et al. (US 5659342) in view of Suemune (US 5942043).

Lund et al. discloses an ink jet printing apparatus capable of performing a preliminary ejecting operation that does not contribute to printing (in term of “purging”) (*Abstract*), said apparatus comprising a print head having an ejecting portion (*column 3, lines 33-38*).

Lund et al. does not disclose wherein an amount of ink to be ejected through said ejecting portion varies depending on the amount of time during which printing is not executed and wherein one or two ejections are performed through said ejecting portion in one preliminary ejection operation.

Suemune discloses an ink jet printing apparatus capable of performing a cleaning operation by ejecting inks through nozzles of a printhead, wherein an amount of ink ejected through the nozzles varies depending on the amount of time during which printing is not executed (*FIG. 6, step S5A and column 4, lines 41-44: The output of timer 12 is checked to determine an elapsed time from when the recording apparatus is turned off last time*), and wherein the ejection is performed through the nozzles only one or two times, selectively, in one preliminary ejecting operation (*FIG. 5: The number of times of ejection is performed in each level of the cleaning operations 3-8 is only 1 or 2*).

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Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the service operation in the printing apparatus disclosed by Lund et al. such that the amount of ink ejected by the service operation varies depending on the amount of time in which printing is not executed as disclosed by Suemune. The motivation of doing so is to effectively remove the dried ink deposited on the nozzles as taught by Suemune (*column 1, lines 32-37*).

Lund et al. also discloses the following claimed inventions:

Referring to claims 3, 31: wherein said preliminary ejecting operations performed when said amount of ink passing through said ejecting portion is decreased below a normal value (*column 1, lines 47-51: The spitting is needed when nozzles are partially blocked that decreases an amount of ink passing through the nozzles below a normal value*).

Referring to claims 4, 32: wherein said preliminary ejecting operation is performed between the time when said amount of ink passing through said ejecting portion starts to decrease below said normal value and the time when said amount of ink recovers to said normal value (*column 1, lines 47-51: spitting is needed when nozzles are partially blocked that decreases an amount of ink passing through the nozzles below a normal value. Because after the spiting is done, the opening of nozzles is clear, the amount of ink passing through the nozzles is recovered to a normal value*).

Referring to claims 5, 33: wherein said preliminary ejecting operation is performed on a print medium (*Abstract*).

Referring to claims 6, 34: wherein said preliminary ejecting operation is performed on said print medium only if dots formed on said print medium may be unnoticeable compared to a

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printed image, and wherein said preliminary ejecting operation is performed on an object other than said print medium if dots may be noticeable (*column 5, line 1-3, column 7, line 12-15, and column 6, line 58-67*).

Referring to claims 8, 36: wherein said preliminary ejecting operation is performed when a predetermined time has elapsed after a last ejection, said predetermined time including time during which said amount of ink passing through said nozzle is decreased significantly (*column 5, line 66 to column 6, line 3*).

Referring to claims 10, 11, 38, 39: wherein said print head has a plurality of nozzles, and wherein said predetermined time is determined for each of nozzles and wherein said predetermined time for each of said nozzles is corrected using dithering, error diffusions, or random numbers so that a dot pattern formed during said preliminary ejecting operation for said plurality of nozzles is unnoticeable compared to a printed image (*column 7, line 12-15*).

Referring to claim 13: wherein said print head includes an electrothermal converting element, said print head ejecting ink using thermal energy generated by said electrothermal converting element (*column 3, line 31-32*).

Referring to claim 14: wherein said print head includes a piezoelectric element, said print head ejecting ink using mechanical energy generated by said piezoelectric element (*column 3, lines 32-34*).

3. Claims 9, 12, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund et al. (US 5659342) in view of Suemune (US 5942043), and further in view of Fujii (US 6299277).

Lund et al., as modified, discloses the claimed invention as discussed above and also disclose wherein said predetermined time is determined depending on a temperature condition of said printing apparatus (*column 5, line 26-35*). However, Lund et al., as modified, do not disclose that said predetermined time is determined depending on a humidity condition of said printing apparatus, a table used to determined said predetermined time and ejecting numbers for said preliminary ejecting operation, and a control device for controlling said preliminary ejecting operation, said control device using said table to perform said preliminary ejecting operation **(Referring to claim 12)**.

Fujii discloses that a predetermined time of a recovering process in an ink jet printer is determined dependently on a humidity condition of the printing apparatus (*column 3, line 53 to column 4, line 10*), a table used to determine the predetermined time and ejecting numbers for an ejecting operation, and a control device for controlling the ejecting operation, wherein the control device uses data in a table to perform the ejecting operation (*column 4, line 5-16: a conversion table for converting the relative humidity to the evaporation rate of water from the ink. Based on the evaporation rate, the suitable timing is determined*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the ink jet printing apparatus disclosed by Lund et al., as modified, such that including the conversion table for converting the relative humidity to the evaporation rate of water from the ink for determining the predetermined time to perform the recovering operation as disclosed by Fujii. The motivation of doing so is to be able to determine suitable timing which fulfills necessary and sufficient conditions in executing the removal of

thickened ink adhering the printhead in order to enable the ink jet printer to flexibly cope with changes in the environment as taught by Fujii (*column 4, line5-10*).

Allowable Subject Matter

3. Claims 7 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for allowance of the claims were indicated in the previous office action.

Response to Arguments

Applicant's arguments filed 01/24/2005 have been fully considered but they are not persuasive.

In that regard, the applicants respectfully submit that the two groups of claims are closely related and that a proper search of any of the claims of one group would likely include a search of the claims of the other group. In response, the examiner cites that “*Under the statute an application may properly be required to be restricted to one of two or more claimed inventions if they are able to support separate patents and they are either independent or distinct*” (MPEP 803). In this case, the application contains the inventions that are patentable over each other so the inventions support separate patents. As a result, the restriction requirement is proper.

Moreover, the applicants submit that nothing in Suemune would teach or suggest that an ejection is performed through an ejecting portion only one or two times, selectively, in one preliminary ejecting operation. The examiner does not agree with the applicants' arguments. As clearly shown in FIG. 5, Suemune discloses a cleaning operation operated in multiple levels, in which for each level from 3-8, only one or two times of suction or

ejection through ejection portions (nozzles) is selected for being executed per cleaning operation (preliminary ejecting operation). As a result, Suemune discloses the invention as claimed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action. Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
March 9, 2005



Stephen D. Meier
Primary Examiner